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AMENDMENT TO THE CLAIMS

1. (Withdrawn) A silicon photodetector assembly adapted for at least one frequency of light comprising:

a silicon body having a light admitting surface;

a buried Distributed Bragg Reflector (DBR) located beneath said silicon body and facing said light admitting surface, at least one pair of adjacent layers of said DBR being bonded together;

doped semiconducting layers adjacent said light admitting surface and said DBR respectively, one of said semiconducting layers being doped p type and the other of said semiconducting layers being doped n type;

said light admitting surface and said DBR forming a resonant cavity to said at least one frequency of light.

2. (Withdrawn) The photodetector assembly of claim 1 further including a source of electrical bias for said assembly.

3. (Withdrawn) The photodetector assembly of claim 1 wherein said semiconducting layers are "n" type adjacent said DBR and "p" type adjacent said light admitting surface.

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4. (Withdrawn) The photodetector assembly of claim 1 wherein said DBR includes one or more alternating layers of silicon and silicon dioxide.

5. (Withdrawn) The photodetector assembly of claim 1 wherein said DBR includes 1.5 pairs of silicon and silicon dioxide layers.

6. (Withdrawn) The photodetector assembly of claim 1 wherein said light has a wavelength of approximately 850 nm.

7. (Withdrawn) The photodetector assembly of claim 1 wherein said DBR includes layers of silicon and silicon dioxide formed from different silicon wafers bonded to form said DBR.

8. (Withdrawn) The photodetector of claim 8 wherein said bonded layers are bonded at silicon and silicon dioxide surfaces.

9. (Withdrawn) The photodetector of claim 1 wherein said DBR includes at least one layer from an original silicon wafer layer and at least one grown layer.

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10. (Withdrawn) The photodetector of claim 1 wherein said DBR includes at least one silicon layer cleaved from a region of hydrogen implanted atoms.

11. (Withdrawn) The photodetector assembly of claim 1 wherein said cavity is a Fabry-Perot cavity.

12. (Withdrawn) The photodetector assembly of claim 1 wherein said pair of layers of said DBR are respectively approximately 174 and 437 nm in thickness.

13. (Original) A method for fabricating a silicon photodetector assembly adapted for at least one frequency of light comprising the steps of:

providing a first body of silicon having a layer of silicon dioxide on a surface thereof;

providing a second body of silicon;

implanting hydrogen atoms at a predetermined depth in said silicon surface forming a boundary between hydrogen implanted silicon and unimplanted silicon;

bonding a silicon surface of said second body to the silicon dioxide layer of the first body;

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separating the hydrogen implanted silicon from silicon not hydrogen implanted at said boundary thereby exposing a separated surface;

providing a further body of silicon having a layer of silicon dioxide thereon;

implanting hydrogen atoms at a predetermined depth in said further body forming a boundary between hydrogen implanted silicon and unimplanted silicon;

bonding the silicon dioxide layer of said further body to said exposed silicon surface;

separating the hydrogen implanted silicon from silicon not hydrogen implanted at said boundary of said further body thereby exposing a separated surface thereof;

doping said further body near the separated surface to create a first semiconducting region of one of p and n types;

providing a silicon layer on the separated surface of said further body to form a cavity for light coupled into the silicon layer from a light admitting surface thereof; and

doping said silicon layer near the light admitting surface to create a second semiconducting region of type opposite to the type of said first semiconducting region.

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14. (Original) The method of claim 13 further including the steps of repeating the last mentioned further body providing, implanting, bonding, and separating steps one or more times.

15. (Original) The method of claim 13 wherein said bonding step includes the step of heating the hydrogen implanted body to promote cleaving or fracturing at regions containing hydrogen.

16. (Original) The method of claim 15 wherein said heating step includes heating to a cleaving temperature followed by heating to a bond strengthening temperature.

17. (Original) The method of claim 16 wherein said cleaving temperatures and strengthening temperatures are respectively approximately 600 degrees C and 1000 degrees C.

18. (Original) The method of claim 13 wherein the step of providing a silicon layer includes the step of growing an epitaxial layer on the silicon fractured at said boundary.

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19. (Original) The method of claim 13 wherein said step of providing a silicon layer includes the step of providing a first semiconducting layer adjacent said boundary.

20. (Original) The method of claim 19 wherein said step of providing a silicon layer includes the step of providing a light admitting second semiconductor layer at an outer surface thereof.

21. (Original) The method of claim 20 further including the step of providing conducting connections to said each of first and second layers.

22. (Original) The method of claim 21 further including the step of biasing said conducting connections.

23. (Original) A photodetector assembly manufactured according to the method of claim 13.

24. (Currently amended) A method for fabricating a buried reflective layer in silicon adapted for at least one frequency of light, comprising the steps of:

providing a second body of silicon;

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implanting hydrogen atoms to a predetermined depth in said silicon surface forming a boundary between hydrogen implanted silicon and unimplanted silicon on either side thereof;

bonding a silicon surface of said second body to the silicon dioxide layer of the first body by heating the hydrogen implanted body to promote cleaving or fracturing of regions containing hydrogen from regions not containing hydrogen, wherein a first heating step to a cleaving temperature is followed by a second heating step to a bond strengthening temperature;

separating the silicon at the hydrogen boundary thereby exposing a separated surface;

providing a silicon epitaxial layer on the silicon fractured at said boundary.

providing a first body of silicon having a layer of silicon dioxide on a surface thereof;

providing a further body of silicon having a layer of silicon dioxide thereon;

implanting hydrogen atoms to a predetermined depth in said further body forming a boundary between hydrogen implanted silicon and unimplanted silicon on either side thereof;

bonding the silicon dioxide layer of said further body to said exposed silicon surface; and

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separating the silicon at the hydrogen boundary thereby exposing a separated surface.

25. (Original) A method for fabricating a buried reflective layer in silicon of claim 24 wherein said cleaving temperatures and strengthening temperatures are respectively approximately 600 degrees C and 1000 degrees C.

26. (Withdrawn) A method for fabricating a buried reflective layer in silicon of claim 25 further including the step of providing a silicon epitaxial layer on the silicon fractured at said boundary.

27. (Withdrawn) A single silicon wafer having photolithographically formed therein a photodetector having a buried reflector according to claim 1 and a signal processing circuit connected thereto to enable the detection of light thereby.

28. (Withdrawn) An array of photodetectors having buried reflectors according to claim 1 formed in a single silicon wafer and adapted to respond to light incident over said array.

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29. (Withdrawn) The array of claim 28 wherein at least some of the photodetectors in the array have buried layers dimensioned for different frequencies.

30. (Withdrawn) The array of claim 28 further including processing electronics formed in said array.

31. (Withdrawn) A photodetector having a buried DBR layer according to claim 1 and further including layers thereon selected from the group consisting of a SiGe absorption region, SiGe/Si quantum well absorption region, and metal semiconductor internal photoemission (Schottky) type absorption region using metal selected from the group consisting of Pt, Ir, Pd and Ni.

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